SECRET

MONTHLY REPORT

[redacted]

25X1

PAR 224

10 July 1964

SUBJECT: 3-15X Fluid Gate Enlarger

TASK/PROBLEM

1. Develop and fabricate an enlarger having continuously variable magnification from 3 to 15X for 70mm square negative gate size. Print sizes to range to 40 x 40 inches on cut sheet stock.

DISCUSSION

2. Work on this project is proceeding with close correlation to that on PAR 202. Effort since 15 May has been on:

a. Vacuum Platen: To explore pressure difference and air volume requirements, a wood and "tempered hardboard" breadboard model with a 40 x 40-inch face was built. A centrifugal blower with a 1 hp. high speed motor provided the vacuum. Following is a brief discussion of breadboard testing:

(1) With 1/16-inch diameter holes on one-inch centers over the 40 x 40-inch surface, this blower provided about 0.5 psi vacuum, even with no stock in place. This pressure difference is enough to hold single weight paper print stock or standard base (5.5 mil) film flat and firmly in place. The holding force was increased about threefold by cutting a grid of 1/16 x 1/16-inch grooves with groove intersections at each vacuum hole.

(2) Strongly curled double weight paper print stock is held to the platen through a central cone of the sheet but with two edges lifted off, due to the "progressive" lifting effect. The two edges may be held down by placing a rigid sheet bordered by a soft gasket to cover a narrow edge of the paper at each of the two lifted edges.

(3) The air pressure and air flow rate requirements were established and a suitable design for the platen face is available.

b. Negative Transport:

(1) Design studies on torque motors and commercial electric brakes for the spindles have been made. The model will be built with toothed rubber belt drive from the torque motor to the spindle. Various reduction ratios will be tried in testing the model.

MONTHLY REPORT

PAR 224

10 July 1964

(2) A system of varying the brake torques (by varying the brake coil voltages) in relation to the voltage applied to the torque motors is being explored. The breaking of both take-up and supply spindles rather than only the supply spindle may eliminate the necessity of sensing the direction of spindle rotation.

(3) Sketches of some model components are nearing completion and some of the long delivery purchased components are being placed on order.

c. Lens Design:

(1) The contractor's lens design group under [redacted] was authorized to design the family of monochromatic lenses and the associated condenser lenses for this project and PAR 202. This group now has an "automatic" computer program suitable for assisting in the design of high quality lenses. 25X1

(2) The specification for the family of color corrected lenses is complete.

PLANNED ACTIVITY

3. A comparison of commercial centrifugal blower specifications will be made and motor-blower unit more suitable for operation with the enlarger will be ordered. A study of structural design and materials for the platen assembly will be made.

4. Several drawings for the negative transport model will be released for fabrication.

PAR - 224

See PAR-202 "Quarterly Review Conference" 8 June 64